

FINAL REPORT

Traveler Information Services in Rural Tourism Areas Appendix C: Observations at Tourist Interactions with Kiosks

Prepared for:

**U.S. Department of Transportation
ITS Joint Program Office, HVH-1
Washington, D.C. 20590**

June 30, 2000

Principal Authors:

**Dr. Hugh Clark and Selena Barlow
CJI Research Corporation
Columbus, Ohio 43209**

Notice

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

Table of Contents

	<u>Page</u>
Introduction: Method and Background	1
Castle Rock Kiosks	3
Criteria: What characteristics should an effective interactive tourist kiosk have?	4
Summary of findings	4
Detailed Observations and Comments	6
Reliability	6
Visible, inviting, and easily understood for what they are	7
<u>Location</u>	7
<u>Locations where tourist respondents would like to see kiosks.</u>	8
<u>Interior location.</u>	8
The system must be easy to use.	9
<u>The kiosk as a machine.</u>	9
Experienced computer user who encountered problems using the system.	10
<u>A computer novice who quickly became fairly proficient.</u>	12
<u>A novice who had difficulties with the system.</u>	14
The bottom line: Is it useful for the purposes of the user?	16
<u>Paid information.</u>	16
<u>Three of the most favorable responses to free information.</u>	18
Some differences between the Grand Canyon and Branson sites that will affect the tourist's utilization of kiosks and other aspects of ITS.	24
Branson	26
Summary of User Issues	29
Conclusion	30

PRELIMINARY FINDINGS

Observations of Tourist Interactions with Kiosks in Rural Tourism Areas



Branson TRIP



I-40 TTIS

October 27, 1998

Prepared for:

**U.S. Department of Transportation
ITS Joint Program Office, HVH--1
Room 3400
400 Seventh Street, SW
Washington, D.C. 20590**

Prepared by:



**Battelle
505 King Avenue
Columbus, OH 43201**

CJI RESEARCH CORPORATION

A Preliminary Report on Observations of Tourist Interactions with Kiosks in Rural Tourism Areas

Prepared by:

Dr. Hugh M. Clark
and
Ms. Selena Barlow

CJI Research Corporation

1998

Introduction: Method and Background

This report is largely based on intercept observations made by Selena Barlow at the kiosk at the Flagstaff Visitor Center in Arizona, part of the I40 rural ITS site. The observations were conducted on October 16 and 17, 1998. This site was chosen because there is consistent tourist traffic there, and the site is indoors. The other Grand Canyon site operational at this time is at a KOA campground. With cold weather having begun, the traffic there was likely to be minimal. Although there are kiosks at Branson, none was operational in an area of high tourist traffic at the time of our visit for qualitative research in September because the installation was behind schedule. Although many of the local tourist information needs are quite different, many of the challenges of fully utilizing the Castle Rock kiosk system are likely to be similar.

A small number of observations were also conducted in Branson, Missouri in September using a lap-top very imperfectly simulating a kiosk. This was done because no kiosk was working there in an area to which tourists were attracted. While these observations and the Branson experience are commented on late in this report, the primary focus is on Flagstaff.

Observations and interviews were conducted with anyone who approached the Flagstaff kiosk, or, if no one approached, tourists were intercepted and asked to try the kiosk. Ms. Barlow wore the uniform yellow t-shirt identifying her as an official survey team member to make the approach immediately understood by potential respondents. Respondents were offered \$5 cash to participate, an incentive that had proved effective in recruiting previous interviews at both the Grand Canyon and Branson.

To complete her observations, Ms Barlow, for the most part, had to approach respondents. Only one person approached the kiosk on her own during Ms Barlow's seven hours on site. She interviewed her and a total of twenty other people whom she had to approach and ask them to participate. She approached twenty three people and completed interviews with twenty-one people in twelve traveling parties. Only two persons refused the invitation to try the kiosk. They were decidedly negative. Barlow's notes from those encounters illustrate:

In response to my question if she had noticed the kiosk, a woman traveling with a young child said "It looks like a scam if you have to put money in it to use it." She did not perceive that there were free services and didn't quite believe me when I said certain services were free. Didn't want to try it.

A young man waiting for a train thought the kiosk looked like an ATM. He did not want to try it, even for \$5.

Most people, however, were happy to cooperate, especially for the cash incentive, but also for the novelty. Each interview required at least fifteen minutes, and several required thirty minutes because the respondents became quite engaged in their experimentation with the kiosk.

This report is based on three elements:

1. Ms Barlow's semi-structured, qualitative conversations with respondents.
2. Her observations of how people used the kiosk.
3. Ms Barlow's and Dr. Clark's interpretations of respondents' experience with the kiosk and their comments, and of the characteristics of the kiosks, information needs, and the web sites in Arizona and Missouri.

We intend this to be an interpretive report, like all of our qualitative research reports, and not simply a report of kiosk user experiences.

Castle Rock Kiosks

In originally designing the qualitative research, we had expected to find well-utilized kiosks in highly visible locations in both Flagstaff and Branson. We expected that travelers would be understanding the uses of the kiosks and would be using them for practical trip planning purposes. In short we expected the system to be much farther along the path of consumer acceptance and system sophistication that it was at the time of the observations. We had therefore expected to interview tourists in depth about their area travel and the impact of the information they were finding on the kiosk on their travel plans.

We were premature.

In fact, the kiosks were not visible, and were not being used by tourists. Only one was effectively in use, and it was continually mistaken for an ATM by tourists, who thus had no reason to approach it. Moreover, the combination of hardware and software presented a series of problems and challenges to the users so that, while some found the kiosks intriguing and helpful, none found immediate practical application for the information. Therefore we could not expect to find major behavioral effects of the kiosks.

Specifically, in no case did the system demonstrations result in any re-routing, choice of lodging, or choice of restaurants at all. They did serve to provide some confirming information about attractions and weather. The greater effect of the tourists' interaction with the kiosk was to give travelers a quick view of a new information technology, alerting them to something they will watch for in the future.

The criteria by which we would be able to comment on the impact and importance of the kiosks to the ITS program could therefore not be their impact on changing travel behavior since *there was absolutely no change impact at all*. Instead it had to be the potential role of the kiosk in introducing the ITS technology to the touring public.

The qualitative research thus became a series of observations of the tourists' experience with this new delivery mechanism of web technology rather than in-depth interviews about the impact of kiosk information on the touring experience. The following text reports on our observations of how tourists regarded the kiosk in that sense.

Criteria: What characteristics should an effective interactive tourist kiosk have?

Innovative technologies in use in interactive public information systems should have several characteristics. They should be:

- ! Reliable.
- ! Visible, inviting, and easily understood for what they are.
- ! Easy to use.
- ! Useful for the purposes of the user and on the user's terms.
- ! Adaptable. Able to support functional adaptation and expansion to meet consumer needs as they are used by the public.

Based on the first four of these criteria, the kiosk at the Flagstaff Visitor Center is a system with high potential which is not yet being realized. On the other hand, the fifth criterion, adaptability, they appear to hold significant promise.

Summary of findings

Reliability. On two occasions we have experienced reliability problems with the kiosk's operation. These were perhaps the result of growing pains inherent in placing a new technology in a public place. On these two occasions, when CJI personnel have attempted interviews at the Flagstaff kiosk site, it has not been functioning. This may be coincidence, or it may indicate a systemic problem. We want to emphasize that our limited review cannot determine this, nor was it intended to test system reliability. We merely point out that based on our experience reliability requires further examination.

Visibility. The kiosk at the Flagstaff Visitor Center is visible in the sense that it is located in a facility with high tourist traffic and is in clear view in its location within the facility. It proved to be "perceptually invisible" to most people, however, since its functions were not understood, and it was mentally dismissed by being categorized as some type of ATM unrelated to the information seeking of a tourist at the Visitor Center. In that sense it was clearly very uninviting and misunderstood. Even when the potential user approaches the machine, it is not immediately clear that there are free services since the on-screen "free services" button has very low visibility to users, and the novice user tends not to understand how to use the touch screen to access it anyway.

Easy to use. Ease of use varies with level of computing experience. That will change with time as computer familiarity continues to spread. However, even among experienced users, the lack

of directions, the combination of both a keyboard, touch screen and slide pad took some acclimatization and trial and error. And the website itself, including both the ADOT site and the Arizona.tripusa site had significant limitations for the user. The lack of a “back button” was perceived by several users as a problem when they were navigating the unfamiliar website. Most respondents initially found the touch screen difficult to use. It often requires double touch, a fact which most people do not immediately understand. Scrolling rarely works with touch. (We are not sure if it is intended to.) On the other hand, most of the novice users were able to quickly gain familiarity with the idea of using the touch screen, a familiarity they might not have gained with a mouse or other device.

Most respondents did not initially realize they could touch the locations on the home page map for information about those specific geographic areas. This area specific information can be accessed in no other way, however. Several respondents observed that there is no query or “search” function which would allow users to go directly to desired types of information rather than searching through a sequence of information pages. This, they said, slows them down and discourages use.

Useful for the purposes of the user and on the user’s terms. In this sense, much of the information provided by the kiosk at the time of the interviews was very limited in the view of the respondents. However, some respondents did find what they were looking for - weather information, a recreation site, a restaurant, a listing of lodgings. Others found information which, while potentially useful, was too limited (e.g., the list of restaurants) or too arcane (e.g., the “cryptic” construction closure and weather notes in the ADOT map. See illustration in Text Box 1). Some respondents also complained that the information within a given set (e.g., lodging, restaurants) was not organized by category, and thus they found it difficult to use on their own terms.

Most of these kinds of problems can be corrected. Some of them (such as the incompleteness and apparent lack of order in restaurant name lists) may be inherent in the rivalries inherent in any directory of competing services -- especially a new and untried one -- and will perhaps pass with time as they did years ago with the advent of Yellow Pages.

In the review which follows, we detail the reasons for these observations.

Detailed Observations and Comments

Reliability

The testing interviews were not intended to test system reliability. That requires different methods. However, our experiences were sufficiently problematic that they suggest that reliability should be closely examined.

When Ms Barlow arrived at the Flagstaff Visitors Center on Friday, October 16, the kiosk appeared to be functional. The welcome screen was up, and all seemed to be in order. However, when she tried to begin the first interview, she found that the kiosk was off-line (not connected to the Internet) and would therefore not go beyond the welcome screen. She called the Castle Rock coordinator (Mark Davis) who suggested unplugging and plugging it back in to get it to reconnect. That was successful. Her notes reflect this encounter:

Young British couple. Internet users. Had not noticed the kiosk and did not find it inviting. Said it was “Very grey, the screen was too small and did not look like a free service.”

When we began the interview, it took them a bit to find the free service button. Then it did not work because the system had gone off-line, although we were unaware of that at the start of the interview. They were quite patient at trying again and again, but we finally realized it was off-line and they went to the clerks to ask for information.

The re-connection took another 4-5 minutes and was successful. Ms Barlow then conducted three interviews with other respondents. While preparing for fourth interview, she was using the kiosk herself, trying to find some information on the site that a respondent had been unable to locate. Unable to navigate, she realized the system was again off-line. She tried to re-start the Internet connection by unplugging and re-plugging twice, each time with no success and had to end the interviewing shift since it was then Friday evening and no further support was available.

This incident highlighted one system problem which is that when the system is off-line, there is no way to know that until someone tries to use it. The lighted welcome screen stays up. There is no audible auto-redial or other tone. Therefore neither the visitor center staff nor a potential user is alerted that there is a problem¹.

¹ Note: Recently, the Internet provider for this kiosk was changed. A previous Internet provider used an auto-redial feature to assure that if the local connection at the Visitor Center was lost, the system would redial. However, when the provider server itself was down, the re-dialing could not succeed, and was incessant, loud, and irritating. There is, however, no software control of the redial, nor any keyed mechanical means to turn it off. The staff had no recourse, therefore, but to unplug it. Consequently, a redial with an audible signal which would indicate presence of lost connection, is not a workable solution unless it has an override shut-off mechanism. On our first trip to Flagstaff, we observed this situation.

In the previous CJI Research visit to this site, the system was also down (see footnote). In that case there had been a storm which was said to have knocked out the connection with the provider's server. This connection could not be remotely restored. Nor was maintenance available on the weekend. Consequently, on that August weekend, the kiosk was out of order from Friday afternoon through Monday morning.

Whether these kinds of problems are endemic to the system, or whether the visits we made found problems by sheer coincidence is unknown.



Figure 2 Flagstaff railway station before remodeling into visitor center

However, the Visitor Center staff said that few tourists use the kiosk, so seldom does anyone complain of its not working. Although we cannot be certain that these reliability problems are frequent, the connection record of the system and recovery and maintenance support mechanisms should be examined carefully.

Visible, inviting, and easily understood for what they are.

Visibility has three components: (1) the location of the facility where a kiosk is located, (2) the location of the kiosk inside that facility, and (3) the perception by the public of the kiosk.



Figure 3: Location of first kiosk in Branson, MO. It is in store on second story above photo shop.

Location. The Flagstaff kiosk where the interviews were conducted is located in the Visitor Center. At the time of the interviews, this was one of two functioning kiosks in Flagstaff. The other was at a KOA campground.

The website photograph of the Flagstaff Visitor Center on this page depicts the historic local railway depot, still functioning as such, and now reconstructed as a Visitor Center as well.

to access because of one-way streets. However, compared to the virtually invisible, second story, first kiosk site in Branson, Missouri (See photo) the site is accessible and highly visible.

The Visitor Center location itself was criticized by one Flagstaff key informant for being difficult

The Visitor Center has a heavy flow of tourists seeking information, Moreover, it doubles as an Amtrak railway station and thus attracts some rail travelers.

The same cannot be said for the first kiosk to be placed in Branson, Missouri which is in a nondescript second story location virtually impossible to find without detailed direction and difficult to find even with directions. The second planned location in the Branson area, however, is the Dewey Short Visitor Center by Table Rock lake, an attractive facility operated by the Army Corps of Engineers to which many tourists come and which is made highly visible by signage and architecture.



Figure 4: A Castle Rock kiosk

Locations where tourist respondents would like to see kiosks.

Asked where they would place kiosks if they could choose, respondents tended to suggest hotel lobbies. The reason for this is that they already expect to get information from a concierge, a desk clerk or brochure rack. The hotel is their base of operations. By obtaining information at their hotel, they do not have to find another location first before seeking local travel information. Some travelers suggested major gas stations as locations because travelers prefer not to stop often, but already have to stop for gas. One couple interviewed planned their trip with AAA and books from the library. They thought AAA offices would be a good location for kiosks. Generally tourists also liked having kiosks at visitor centers. One man who was especially interested in winter weather conditions because of

previously being stranded in Flagstaff said, *“It would be good if kiosks could be at locations that are open 24 hours for checking road conditions.”*

Interior location. Inside the Flagstaff Visitor Center, the kiosk is in a well lighted corner of the main room where staff can easily observe it, and where potential users approaching the information counter would also see it. However, when asked if they had noticed the kiosk, most of the respondents either said they had not or assumed it was an ATM. Moreover, they said, that they did not find it very inviting. The prominent credit card decals made it look like something other than a free service (they said it looked like an ATM machine).

While we regard the corner location at the Visitor Center as visible and viable, several tourists commented that “The corner location makes it easy to miss.” What seems required is a combination of better signage, and for Visitor Center staff to gain confidence in the system so they begin referring people to it for routine questions about restaurants, attractions and traffic. At present signage, confidence, and willingness to refer are all lacking.

Visible or not, the kiosk at the Flagstaff Visitor Center, clearly did not attract tourists during either of CJI’s two visits to the site. During our first site visit in August the kiosk system was not working. However, we spent more than three hours observing the heavy weekend (Saturday morning) tourist traffic through the center, and conducting intercept interviews unrelated to the kiosk per se. During that time not one person approached the kiosk. There was no “out-of-order” sign on it. Because of the lighting, one could not tell at a distance that it was not working. Yet no one approached it. Again in October, in a seven hour period, only one person approached

and used it. These could have been exceptional events. Castle Rock access records may be able to verify or invalidate frequency of access.

The reason that more people were not approaching it was simply that they misunderstood its purpose. Respondents told us that the prominence of the credit card symbols, the unfamiliar appearance of the machine, its placement in an inconspicuous part of the floor, and the lack of a large and bright, inviting computer screen made it look like an ATM or something else unrelated to the task of obtaining travel information. (The picture illustrations show the kiosk being used in Branson. However, it is identical to the machine being used in Flagstaff.)

Thus the Flagstaff kiosk, while literally visible, was apparently mentally dismissed by most potential users, becoming in a perceptual sense “invisible.” The financial implications of the decals did not clearly say “free information” to the potential user. Thus, its purpose was not easily understood, and it was uninviting.

This machine and the underlying concept are novel in both function and design. There is not yet an experience base among the touring public which would provide word-of-mouth information about its function base on a repeat user market segment. It is too new. Innovations such as these require time to diffuse into public consciousness. Therefore, while there are clearly shortcomings in the present execution of visibility tactics, lack of awareness is not due only to those problems but is inherent in the process of diffusion of innovation.

This fact, however, makes signage, staff support, and machine design features all the more important in the short run.

The system must be easy to use.

Respondents varied widely in their ease of use of the system. In general, ease of use depended in part on the level of experience of the user, though this experience sometimes affected ease of use in unexpected ways.

The kiosk as a machine. Those who had computer experience were generally better able to grasp the use of the glide pad to move the cursor and to understand the touch screen. They were also used to the idea of waiting for images to form. On the other hand, they also failed to find things they are accustomed to – most importantly a back button which would enable them to move to a prior screen without first going to the home page and which makes web exploration faster and users more willing to experiment by going to a new screen. Some also suggested that a search function would help with navigation through the site. Some were confused by the combination of keyboard, touch screen and glide pad.



Figure 5: Barlow using a kiosk to illustrate scale of kiosk and touch screen

The novice Internet users, tended to catch on fairly quickly, but required instruction, and would not have approached the kiosk on their own, or quickly mastered the combination of touch screen, glide pad, and icons required to use the system effectively.

Kiosk as software. All of the respondents had difficulty finding the “Free” service button. The screen is not bright, and the free services button (which requires a touch to the screen to activate) is inconspicuous. None of the respondents saw it quickly, and some had to be shown the button to get them started.

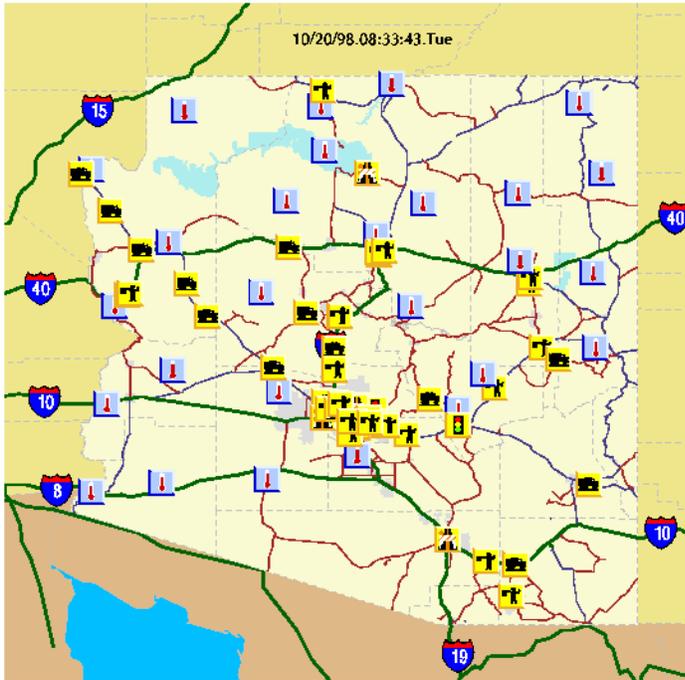


Figure 6: ADOT Road closure map which is starting point for regional information. Web page also includes a key, not shown here, explaining icons

Scrolling was a problem in two ways. First, it appears to work only with the glide pad. Whether this is systemic or a peculiarity of this kiosk, we do not know. However, after realizing that the screen was touch-sensitive, most of the respondents tried to move down the screen by touch, realizing only with trial and error that the glide pad was required. Scrolling is important because several screens require the use of notes at the bottom of the screens which are not visible until one scrolls down. Several respondents had to be shown how to do this.

The sites themselves sometimes presented problems for some respondents, though others found them quite easy to access. At the ADOT site in particular, respondents tended to touch the icons (See **Figure 5**) expecting to find information which was actually in notes below the screen (See Text box 1, page 11). They also found the starting ADOT map difficult because it contained no city names. For tourists only vaguely familiar with Arizona geography, this was very confusing.

Experienced computer user who encountered problems using the system. Excerpts from Ms. Barlow’s interview notes illustrate some of these points from one of the interviews:

Middle aged woman from new Jersey, traveling with husband. She works with computers (CAD system) and has used the Internet. However, she is used to a mouse and said she found the glide pad difficult to use. Also noted that the screen was hard to read because of glare from the window behind the unit. Thought there needed to be bigger directions on welcome screen for getting free services. She did not notice the free services button until shown.

After connecting to the free service page, she chose the lodging category first and looked briefly. She expected the kiosk to work more like her computer at work. For example, when she got the list of hotels she tried to use the keyboard to select a number. Despite,

or perhaps because of, her computer experience, this woman seemed to have more trouble using the system than the others.

Illustration of notes provided with maps on ADOT site

4641 - Road Maintenance: On Interstate40, EW-bound from milepost 139, 7 miles West of JUNCTION State Route 89 & State Route BusinessUSINESS 40 to milepost 144, 2 miles West of JUNCTION State Route 89 & State Route BusinessUSINESS 40

DURATION: Monday, October 12 to Friday, November 20 on weekdays 3AM to 6PM

DESCRIPTION: road construction

Resurfacing of roadway near Crookton Interchange....east bound & west bound...Reduced speed 45 mph.....1 lane traffic through project area. Please observe posted construction signs. - (520) 757-5828

2 - Temperature: Grand Canyon Country

DURATION: Tuesday, October 20 at 3:45AM to 3:45PM

DESCRIPTION: Current temperature

.TODAY...BECOMING PARTLY CLOUDY WITH A SLIGHT CHANCE OF SHOWERS IN THE AFTERNOON. HIGHS FROM THE MID 50S TO LOWER 60S ON THE RIM TO THE LOWER 80S AT THE RIVER.

.TONIGHT...MOSTLY CLOUDY WITH A CHANCE OF SHOWERS AND THUNDERSTORMS. LOWSFROM THE MID 30S ON THE RIM TO NEAR 60 AT THE RIVER. .WEDNESDAY...MOSTLY CLOUDY AND COOLER WITH A CHANCE OF SHOWERS AND THUNDERSTORMS. HIGHS IN THE LOWER 50S TO NEAR 60 ON THE RIM TO THE UPPER 70S AT THE RIVER. TEMPERATURE / PRECIPITATION GRAND CANYON 65 35 61 / 20 40 50 -

I asked her if she would be interested in road conditions. She touched that button. Selected weather from the list. Then went to the ADOT site. Like several other respondents, she tried to click on the icons on the map and legend to find out what they meant, but they are not links. I had to show her to scroll down to notes. There are no on-screen directions. She and her husband said they found the information useful, but she felt it was difficult to access.

Text box 1: Examples of notes found beneath the ADOT road conditions site

This New Jersey couple pre-plan their vacation

trips. They obtain materials before they leave home, and rely on local sources in only a limited way. Thus a website might help them, but the kiosks would be of less interest to them, than to those who arrive in a local area with little pre-planning or information gathering. A second couple, seniors from South Carolina illustrate people who rely on local information sources, and for whom a kiosk has greater potential.

Users with some Internet experience who found the system wanting This couple has had some Internet exposure. They found they could learn the system with some assistance. Ms Barlow observed:

A senior couple from South Carolina. This couple had some experience using the Internet but had trouble with several aspects of the kiosk getting the touch screen function to work and how to use the glide pad. Scrolling was particularly difficult

for them to understand and to accomplish. The glide pad was required, but having learned to touch the screen they kept trying to move down by touch.

Once they got the hang of the technology (with a little help from me), they wanted to find some attractions in Flagstaff. They kept finding attractions in other areas. They finally realized they could click on Flagstaff on the map and get local information, but it was limited and did not include the museum which is what they really wanted. The things they said they wanted to find included:

- C Weather information - they found this OK since it was on the main menu*
- C Road Construction info - did not find their way to the ADOT map; it appeared that this was because of insufficient experience manipulating the web.*
- C Attractions - They found this difficult in the sense that they wanted to limit their search to Flagstaff, but could not tell how to do so. They could pose the question “What are the local attractions in the city?” But they could not obtain an answer on the site.*
- C Accommodations - found the list but felt there was no order to it. They felt it needed to be alphabetized. (Note: It may be randomized intentionally to prevent favoritism to the early part of the alphabet.)*

This couple felt the visitors center was a good location for the kiosk and that rest areas coming into town would be as well. At one point they asked me how much it would cost to use the kiosk after the testing. Told that it was free for the tourist information and only required payment for other services, this surprised them. They would expect to have to pay something to use such a system, though they would not pay under current circumstances.

They said they liked the kiosk concept, but overall they did not find the current execution very useful. It was hard, they said, to find what they wanted and took a long time – much longer than simply asking staff at the Visitor Center or picking a brochure off well stocked shelves.

A computer novice who quickly became fairly proficient. Although several respondents found the kiosk quite difficult to master, it is possible for the inexperienced user to become productive fairly quickly with some coaching as the experiences of a middle aged man from Salt lake City (UT) illustrate. To again excerpt from Ms Barlow’s observations:

Middle aged man from Salt Lake City, Utah. *This man said that he was “computer illiterate” and would not have approached the kiosk on his own. When we started, however, he actually caught on pretty quickly. However, he did have trouble getting to the free services. After I told him to try touching the screen, he touched the big ADOT graphic in the middle several times, without noticing the free services button. It took him awhile to find the small free services button even when he had been told to find places on the screen to touch.*

He said he was very interested in Travel Conditions. He reported that he had been “caught in Flagstaff a few years ago during the big blizzard,” and felt that “Weather information was scarce at that time.” Although he was a novice user,

he found his way to the ADOT site in search of weather information, and was able to get to the right map area by guessing at the northern Arizona map segment. At that point, however, it was not clear to him what the symbols on the map meant. I had to show him that he could scroll down to get explanations of the road closures and weather. Once there, he thought the information was good and wanted to know how up-to-date it is. He said he would definitely like to be able to access this kind of information when weather is bad, and felt he would do so now that he knew how to use the kiosk.

Next he checked out hotels, as he did not yet have reservations for that night. He thought the information provided was useful but not complete enough. “Half the hotels aren’t here.” Suggested that a central reservations site where you could find out what hotels had vacancies would be very useful. However, having said that, he then followed the links to check on a few hotels and found some with on-line reservations. He did not, however, make a reservation.

Tried to find restaurants in Flagstaff but never found any because he had started at the state map instead of at a regional map. He did not see the directions at the bottom of the first restaurant referral screen to go to the regional maps. He tried several approaches to finding restaurants but had no success without coaching because he continued to try to find restaurants through the state level.

After I coached him, he got the regional level and found Coco’s (a Flagstaff restaurant) and noted that they have a kiosk. (Though it was not yet operational, the site reported Coco’s as having a kiosk.) He thought it would be helpful to have a map of how to get to the restaurant since he really did not know his way around Flagstaff.

He then followed a link on the restaurant page to an outside restaurant guide provider, but the site reference had expired. He tried to back out of this screen, but at that point noticed that there is no way to go back (i.e., no “back” button as there would be on a browser). Consequently when he hit dead-ends such as this, he had to return to the home page. He exited and started over to get back to home page.

He was becoming engaged with the system at that point, and looked at attractions. He quickly found a site on mountain biking which he expressed interested in, though he did not pursue it farther.

He said “It would be good if kiosks could be at locations that are open 24 hours for checking road conditions.” This reflected his particular interest in the weather.

He was very patient and spent quite a lot of time at the kiosk. He asked what services you have to pay for. I explained it would be email and other web access. At the end he commented that it was "pretty good."

Here was a novice who found the system initially problematic, but who became interested and spent time with it, learning the fundamentals quickly, and obtaining some information he wanted.

His interest in the weather and experience in the major blizzard are of particular interest because they reflect one of the major concerns of the city traffic engineer and others in Flagstaff, and one of their hopes for ITS – that in severe weather, they will be able to re-route traffic using the kiosk websites, VMS, and radio statewide. They hope to avoid the chaos and costly problems they experienced recently when thousands of eighteen wheel trucks were stranded in and near Flagstaff by an unexpected blizzard. The respondent's comments about 24 hour access to kiosks is very appropriate in this context.

His ability to maneuver through the site despite being a novice, and his interest in information such as reservation availability and weather which one might not be able to obtain from visitor center desk clerks suggests the strong long term potential for the kiosk concept even while his initial avoidance of it, and his initial difficulties in navigation suggest its present limitations.

A novice who had difficulties with the system. We do not want to suggest, however, that all novices or older persons find the system easy to learn and use. This is illustrated by a woman in her 60's traveling with a friend. Ms Barlow's notes illustrate her difficulties:

***Woman in 60's from Illinois.** She said she "...would not have approached (the kiosk) on own." "Not much for these machines" (computers), she said. Had difficulty with touch screen. Not used to using a computer, so use of mouse or glidepad and keyboard were not clear to her.*

She drove from Illinois with a friend. Encountered many road closures on way. Would like to have known about closures ahead of time, so was a good prospect for the ADOT site in that sense. Saw signs in Flagstaff showing that I-17 entrance was closed. She was not sure how they would get on to I17 to go to Phoenix. On the kiosk, she went to the ADOT road conditions site to try to find information. She found it difficult to use; I had to help her find the notes below the closure map. However, she found the notes rather cryptic, and did not find answer to her question.

She thought the types of information were useful but needed to be clearer and easier to use. Thought motels would be best place for such kiosks. Said visitors do not always know about visitors centers. Or hotels could have signage directing them to visitors center, she said.

Another couple also illustrate how the present sites accessed by the kiosk system sometimes provide useful information but do so in a form that is difficult for people, especially novices, to use. Ms Barlow's notes on their experience with the kiosk are on the following page.

Icon Descriptions

-  Level of Service
-  Incident/Accident
-  Road Closure
-  Lane Restriction
-  Road Maintenance
-  Obstruction Hazard
-  Road Condition
-  Weather
-  High Wind
-  Environment
-  Temperature
-  Activity
-  Delay/Cancellation
-  Dangerous Vehicle
-  Exceptional Load
-  Traffic Equip Status
-  Traffic Regulations
-  Headways
-  Travel Time
-  Parking
-  Information



Figure 8: Northern Arizona map from ADOT website

Man and Wife from Phoenix. Visiting Flagstaff from Phoenix for weekend. They said they thought they would have to pay to use the kiosk, and did not understand that it provided tourist information. They did not quite grasp that there were any free services until I actually showed them. They had some, but very limited, experience with computers. They had trouble with both the touch screen and glide pad. Said the system was very “touchy.” and hard to use.

However, they thought the information was useful. Began with the “Attractions” button and found Horse Trail Adventures site - an interest of theirs. “Nice,” said the husband, “This kind of information is helpful.”

I asked them to check the Travel Conditions section. From the list of links, they initially picked “Rand McNally” site, but the system would not connect to that site at that time for some reason. Then tried ADOT site. Looked at map and assumed he could get temperature for locations where there was a thermometer symbol. Clicked on one of the thermometers and got the area map. Tried to click on thermometer again and got nowhere. Would not have found temperature notes at

bottom without help. Thought the information would be valuable if easier to use. They wondered how often information is updated. Thinks checking on Internet at home or at kiosk would be easier than calling up for road and weather conditions, if up to date.

They said they "...Are not on the Internet --- Yet."

Here again we have an example of travelers who initially misunderstood the purpose and terms of using the kiosk, and needed coaching to learn to use it. Yet they became interested in the concept after brief exposure. This type of person illustrates one type of traveler that causes us to conclude that though the system has flaws from the consumer's point of view, it has significant, but still unrealized, potential to become a successful innovation.

The bottom line: Is it useful for the purposes of the user?

The kiosks carry two types of information access – paid and free. For the system to be both useful and self-supporting, both elements need to provide useful information.

Paid information. One respondent did approach the kiosk on her own. She was motivated by the paid services and was unaware of the free added-value services. Her case illustrates the potential for cross-referring users from paid to free access, and perhaps vice-versa.

This woman, traveling with her family, did indeed approach and use the kiosk specifically because of the paid services. She had been unaware of the free services until Ms Barlow pointed them out. Yet none of the other persons Barlow brought to the kiosk to explore free services indicated any interest in paying for additional web services such as checking email or stock quotes. Nor was she, a paying customer, interested on her own in free information services. In short, we saw no evidence that cross-referring mechanisms were working at Flagstaff.

This is a clue based on a few cases, not on a large or random sample. We cannot reach conclusions about the potential of paid services to attract users of the free tourist information or vice versa. It seems likely, however, that the purpose of the kiosk is not yet initially clear enough either to paid or free users to even test the potential for this kind of cross-referring.

Ms Barlow's notes reflect how this one respondent found both the paid and free services of the kiosk useful, and how individually paid services might interact with publically supported services:

***Middle Aged Woman traveling with Family.** This respondent and her husband had actually looked at the kiosk just before I arrived at the Visitor Center on Saturday AM. She was interested in checking her e-mail. Did not realize she could get free tourist information as well. She and her family were in the process of moving to Flagstaff. Extended family members had traveled out with them for vacation and were going back on train.*

She began by putting in \$1.00 to check her e-mail. Had trouble getting machine to take her dollar bill but it worked after several tries. Got into AOL fairly easily. Was able to delete unwanted messages and review others. When her \$1.00 worth of time ran out (there is a timer in the top right corner of the screen), the system simply went back to the welcome screen. There was no warning other than the timer to her to add money. (The visitor center staff had gotten a complaint of this from an Australian gentleman who had the same problem.) She put in another \$1.00, got back in and was able to send a few messages before running out of time again.

She did not notice the free services button until I pointed it out.

Then I asked her to look at the free services. She went first to the "Travel Conditions" and looked at the list of links. Said "I don't care about this" and went to "Attractions." Found information about Walnut Canyon and said "Oh cool." She was sufficiently impressed that she called her brother over to look. He had looked at some information on Internet at home but had not found this site. She commented that she wished she could print it out to take with them.

Though an experienced user, she had some trouble with the touch screen and glide pad...said "it takes a while to learn the touch."

She and her husband said they thought the kiosk was very useful for checking e-mail and finding area attractions. Her husband thought a rail map and rail info would be useful. (They were waiting for the train to put some family members on it.)

Went to ADOT site but had trouble understanding how to use it. I ended up having to help them. They tried to click on icon, but these are not links. I had to direct them to scroll down to the notes which they found confusing.

They liked the idea of having kiosks in motels. They would be useful for road conditions. They stayed in Flagstaff last year and got 1 1/2 feet of snow while there.

Spent about a half hour with this respondent. She clearly enjoyed using the kiosk.

This family illustrates the ideal market situation for the kiosk user in which there is a demand for paid services (which will spread as e-mail spreads at least until cordless portable retrieval devices become ubiquitous) and a demand for free (subsidized) tourist services. They are information-hungry, interested in both e-mail and in travel information. They are Internet savvy. They found both elements of the kiosk system useful.

Moreover, their primary motivation for seeking free information was a key one -- weather. Like a respondent described earlier in this report, this family had been stranded in Flagstaff by snow and felt the weather information would be the best aspect of the system.

This family illustrates two sides of the coin, however. They saw and used the paid services, but were unaware of the free services because of their low visibility on the screen. Also, in seven hours of waiting for tourists, and observing them, she was the only one who approached and used the kiosk.

Free information. The information provided by respondents described above suggests that for many tourists the free information will be useful, but at the present time is difficult to access and is limited in scope. For example, most of them found the ADOT site somewhat difficult to access and use. But some found it useful. More tourists may find it more useful with extreme weather, when some people will have the motivation to use the system.

In some cases, people found the kind of information they sought, but found it wanting. Recall the woman in her 60's who had driven with a friend from Illinois:

She drove from Illinois with a friend. Encountered many road closures on way. Would like to have known ahead of time. Saw signs in Flagstaff showing that I-17 entrance was closed. Was not sure how they would get on to go to Phoenix. So on the kiosk she went to ADOT site to try to find. Difficult to use, I had to help her find the notes. She found the notes "pretty cryptic," and did not find an answer to her question.

Three of the most favorable responses to free information. In contrast, there were others who found the free information both accessible and useful. The limitations they found were primarily frustrations of sophisticated users who know and like such systems and who find them wanting in some respects. These people were all young and experienced with computers.

They cases are illustrated by three travel parties: a group of young hikers from Tennessee, a student traveling with his parents from NAU to show them the Grand Canyon area, and a young Dutch couple touring the United States west. Again Ms Barlow's note provide observations of their interactions with the kiosk.

The first the three examples was the group of young Tennessee hikers who had driven to the Grand Canyon from Memphis.

Group of young hikers from Memphis. They said they would not have approached the kiosk on own. “Nothing says that it provides free information.” Assumed that it was a paid service.

Primary respondent went to “Travel conditions” and clicked on Channel 5 link to try to get local weather. Ended up somewhat lost in Channel 5 site trying to localize and exited to the home page. Friend asked him to check on conditions at the north rim of the Canyon. Went from home page to Grand Canyon area, then to travel conditions which provided only the ADOT road conditions link. They perceived this as mostly information for driving. They wanted weather specifics about the rim areas for hiking. They then persisted and went to the weather channel and successfully got north rim temperatures.

They then went to Travel Distance Guide and checked the distance from Phoenix to Memphis (they were driving back) since Flagstaff was not included in the chart. They found this easy.

I asked them to look at the ADOT site. The primary respondent was Internet experienced and had only a little trouble with the ADOT site. Once he found the notes and generally how the site worked, he said, “I like this...this would be handy.”

Next they checked out “Attractions” and found information on renting mountain bikes. While they did not need to rent bikes at the time, they found this information useful, and the fact that they could get it, “Neat.”

Thought the kiosk was “pretty neat,” and thanked me for letting them try it. They liked idea of being able to get information at home on Internet. They had driven straight through from Memphis (did not stop at visitor centers on way). They were not sure where they would have gotten information before going to north rim.

Their hands-on experience is interesting in several ways. First, they were savvy users, but like others had dismissed the machine as an ATM. Second, unlike most others they had no trouble quickly learning to use it once asked to do so. They found the free service button, experimented and quickly learned the proper combination of touch screen, glide pad and keyboard. Within five minutes they had information they needed for their hike and within ten, further information for their return trip. Like all web users, they made false steps, and like some, they wished for a “back” command. But they persisted and quickly maneuvered through the sites. Moreover, they realized that the web site would be accessible from a distance, enabling them to plan travels better in the future. In other words, this entire type of application had not occurred to them, so that the brief kiosk experience unlocked a new set of possibilities for using ITS not limited to the

specific kiosk itself. In this sense the kiosk opened up for them a range of web-based travel information possibilities they had not previously considered, and thus played not only a direct information provider role but also a role in raising awareness of the ITS concept in general.

It is also interesting that they were uninterested in the paid services in spite of the fact that they said they were email users. They showed no tendency to cross over to the paid site.

The second of the three most favorable respondents was a student at Northern Arizona University traveling with his parents. Again, the optimal user was young and experienced with the Internet and computers.

NAU Student Taking His Parents Sightseeing. He thought kiosk looked like an ATM. He is a regular computer user. However, I had to show him the “Free Services” button, he kept touching the middle of the screen to try to activate.

He was traveling with his parents and wanted activities, he said. So he went to “Attractions” and quickly discovered he could scroll using the keyboard. He wanted to find information about Sedona, but when he clicked Sedona on the map he got general area information. Wanted more specifics on attractions, and restaurants so the information was of no use to him.

He did not feel that road conditions are a problem for him as he “knows my way around,” and he was not attracted to the ADOT or Rand McNally sites. He went to the ADOT site at my request. The map system was not very clear to him, but he tried clicking on the map, got to the regional area map, and then found the notes on his own. He did not feel he needed the information, but he was among the few to find it on his own, and felt it could be useful.

Next he looked at restaurants. Before going to the restaurant site, he asked if it included all restaurants or just selected ones. He soon discovered that it includes only a few in Flagstaff. He then found a list of Sedona restaurants. Commented, “Not much of a selection.” He followed one link to a site that included the menu. “That’s neat.” He liked the ability to access not only name and address but also the menu locally. This would help him choose places to eat, he felt, particularly when traveling with his parents.

Began looking at area “Attractions” and was quite interested. At this point he had zeroed in on the several attractions other than the Grand Canyon itself, and found it helpful in thinking about his sightseeing plans for the weekend, though he made no specific decisions about where to go.

He thought the Flagstaff Visitors Center was a good kiosk location. He suggested also the student union at NAU since many of the students want to tour locally and regionally, he said. Finally, he commented that, “My parents wouldn’t know what to do with it,” indicating that they were not computer users at all.

This student found the kiosk relatively easy to use, and some of the information moderately useful if somewhat limited. His false starts into map areas too broad to give him restaurants and activities he could use were typical of several users, but he overcame that problem by trial and error. Whether he would have done so outside of an interview situation is open to question.

Again, he is a young person familiar with both computers and the Internet. He is indicative of the type of use who will quickly be attracted to improved information or to well publicized local web sites. He differs from some of the local area residents we spoke with in August. It was they more than tourists from outside the area who felt that road closure and weather information would be especially helpful when we showed them the web-site on a lap-top computer (since kiosks were not functioning.) The local people felt that such information would help them move about the region safely in winter especially, while people coming from a distance in August felt they would not travel there in the winter or that they were too unfamiliar with alternate roads to take alternates even if offered.

The third example of a favorable response to the kiosk comes from a young Dutch couple touring the western United States on vacation.

Young couple from Holland. Like many young and middle aged travelers to the Grand Canyon, they are experienced Internet users. Did some searches before leaving home, but said, "It gets time consuming and expensive" (phone charges for access). They said of the kiosk, "It looks like an ATM." Said they were not sure they would have approached on their own, though they had not done so, despite having had the opportunity. They said "The most obvious kiosk sign is the payment decals" which did not suggest the opportunity to find free information. They commented the kiosk might work better if "...set more visibly in a column." They had seen such information kiosks before in Europe and had found them useful. They also said a bigger screen would definitely improve the kiosk's appeal to them.

They found the free services button on their own. They wanted information about hiking and camping in interior of Canyon and found their way through an "Attractions" link to a Grand Canyon site. Found just what they were looking for. They said they would have like to be able to print out pages or have an electronic notebook to paste specific text to and later print out since on this as on many sites they said, "You would have to print out many pages to get the information you wanted"

They noticed quickly that there was no "Back" button. This made searching for information very time consuming because, they said, "You have to go all the way back to 'HOME' and retrace your steps each time." One time they had a problem finding where they had been in terms of previous sites and were unable to orient themselves as they normally would by moving back. Had to return to the Home Page. They also commented that some kind of search function would be helpful

as finding specific information was rather tedious and involved guesswork to move through the branch structure. They said they thought a hotel lobby would be best location for kiosks since it would need to be somewhere you could spend some time (for example while you are doing laundry during a vacation stay).

They had not experienced any real problem with road conditions or construction. Drove to Flagstaff from Palm Springs using a Rand McNally (paper) map. Thus they had no particular reason to be concerned with road conditions. On request, however, they went to the ADOT site but then found it difficult to use because of the manner in which the information is organized. They thought it would be better if you could put in start and end points and have it give you info about road closures, etc. along your specific route. Or if you could touch a specific location and have it give you the relevant notes. Information was “useful but not well presented. It takes too long.” They felt they would not use it for that reason. (The Rand McNally site, while more limited than the ADOT site in detail and update frequency would probably be more appropriate for their style of seeking information.)

This couple represented two of the most sophisticated Internet users, and illustrates one end of the spectrum of challenges to making this innovation accepted and used. To them, the system is easily mastered. The deficiencies are that the system is not fast or searchable enough, and has no output device except the screen itself. Also, it presents some information such as road condition information in a manner that is difficult to apply to one’s trip. In other words it is not enough of a good thing. The other extreme includes those who are Internet novices for whom the enterprise is difficult to master.

One specific thing this couple said is of particular interest. They said that the road condition information, organized by map section and placed in notes, was difficult to use. If we consider their point of view, we see that the traveler would have to have a note pad and preferably also a map while using the kiosk to record the conditions and plan alternate routes, or at least to understand the implications of delays and closures. Their suggested solutions (enter end-points of the route and get specific notes or click active map icons and get notes specific to the icon) would require total reorganization of the programming, and may be impractical. The use of notes activated on specific portions of a highway is already a technology widely used. Either solution would produce a map which was considerably more helpful – especially for those unfamiliar with the local geography.

In summary, the respondents in Flagstaff included a wide range of experience with websites and computers. Depending on this experience, the response ranged from rejection to a qualified positive. Where there was no prior experience, the system was too cumbersome. Where there was experience, the system held promise, though in each case it had serious limitations.

In no case did the system demonstrations result in any re-routing at all. It served only to provide some confirming information about attractions and weather. The greater effect was to give

travelers a quick view of a new information technology some of them will monitor for improvements in the future.

Some differences between the Grand Canyon and Branson sites that will affect the tourist's utilization of kiosks and other aspects of ITS.

Although both are part of the test of rural ITS, Branson and the Grand Canyon could hardly be more different as sites. Whether this is by design or not, the differences present interesting challenges for understanding tourist response to the same technology in two very different settings. These differences will undoubtedly strongly affect conclusions about the kiosks and other aspects of ITS. Among the primary differences are these:

- ! Rural ITS for I40 is centered in the Grand Canyon, which is a large public parkland serving as the core attraction of an immense area of Arizona. Branson is, in a sense, more like a large private theme park than like a city jurisdiction. Its indoor entertainment is the key attraction, although there are side and summer attractions at Table Rock Lake.
- ! The Grand Canyon attracts tourists who stay varied times (often for only a few minutes gasping at and futilely trying to photograph the Canyon but some for a longer time seeing other area attractions which are many miles away). Branson attracts tourists who come and stay for several days to more than a week either to use the lake or to attend shows (or both).
- ! The Grand Canyon attracts people world-wide. Branson, to date, attracts people primarily from a 300 mile radius. This difference has major implications for the kinds of travel information needed, the distance from which it must be accessed (e.g., the UK or Bonn vs St Louis or Kansas City), and the timing of when the information is needed for planning. This suggests the need to coordinate the web-site, especially for I40 with the kiosks so that the user becomes aware even at a distance that local updated formation in the same format will also be available locally when they arrive at kiosks at specific locations.
- ! At the Grand Canyon a major traffic challenge is the drive to the Canyon from a great distance. In Branson, the primary challenge is intra-urban mobility, although sometimes Springfield to Branson mobility and certain other routes into Branson also present significant traffic problems. Thus while information stations oriented to the Grand Canyon can be useful across a wide stretch of territory, they must be concentrated at Branson.
- ! At the Grand Canyon, variable traffic and weather conditions cover a huge physical area and many different activities. In Branson, the range of activities is somewhat smaller and the physical area is much less diverse and smaller, and thus travel options probably fewer.
- ! At the Grand Canyon the traffic problems involve parking and intra-park mobility to some extent. But they also involve moving large volumes of traffic through long stretches of roadway. There are probably peaks, but the difference between peak and trough of traffic is unlikely to be as concentrated in time and space as in Branson. Thus, while at the Grand Canyon, a kiosk system could be used by hundreds or people in a

consecutive manner with some effect on traffic and personal mobility, in Brandon, as thousands of people are suddenly dismissed from shows on Rt 76, one or a dozen kiosks at every site would have negligible effects unless connected to some type of oversize, overhead monitor.



Figure 9: Rt 76, Branson, Missouri at a period of slow eastbound traffic mid-afternoon Saturday

Branson

The challenges of using kiosks in Branson are significantly different from those at Flagstaff and I40. They could hardly be more different. This makes the inter-site comparison particularly interesting. We will comment briefly on them here, and to a greater extent in the final qualitative report.

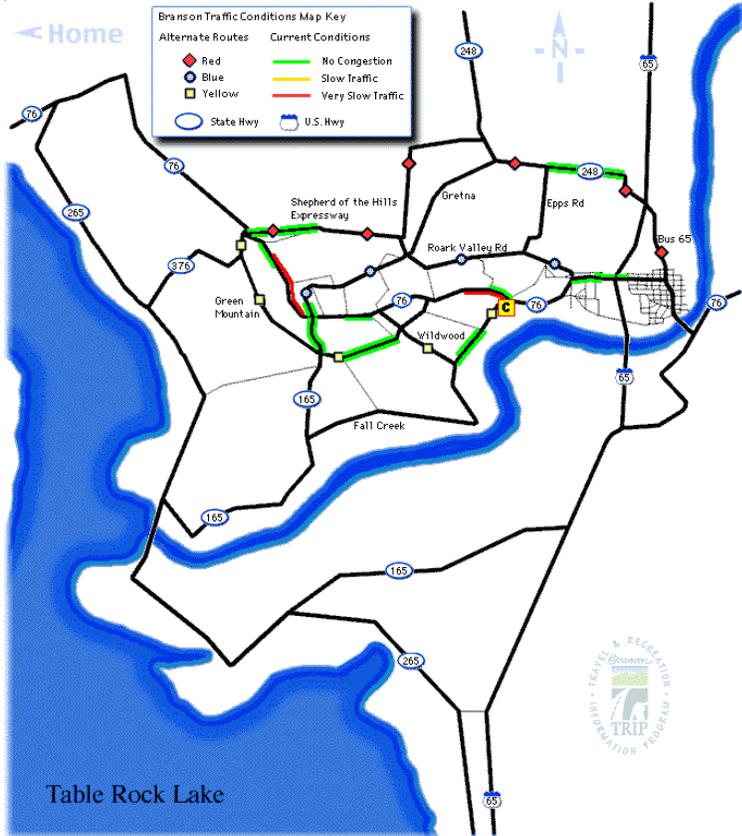


Figure 10: Branson traffic map updated with traffic conditions at five minute intervals.

The essential challenge in Branson is to move people quickly through the city streets as well as to provide up to date information on shows, other tourist attractions, lodgings and restaurants. The primary traffic challenge is that the mini-Vegas style shows entertain thousands of people simultaneously throughout the town and operate on roughly similar schedules. The problem is especially acute on Rt 76 (See photo insert) which is two lanes plus a turn lane, and which contains the original show locations and many present shows.

Attraction information is not difficult to find locally in Branson. One is hard-pressed to drive more than five hundred yards without encountering one or more “Free tourist information” stands. These stands often also sell show tickets but all

provide information on many area tour attractions.

To help deal with the extraordinary traffic peaks, local and state traffic authorities have created color coded alternate intra-Branson routings to expedite traffic flow. The color codes appear painted on the roadways.

The Branson TRIP program utilizes these color codes in its website map which is accessible by the web or kiosk. Each of the routings is coded not only with the red diamonds, blue circles, or yellow squares, but also with red, yellow, or green highlights to show traffic conditions on the routes. The system also includes a local am traffic conditions radio broadcast and a linkage between that station and its FM operator which also provides some traffic information.

Because the kiosk at Branson was not visible to the public at the time of our qualitative research, and the kiosk at the more visible site (Dewey Short Tourist Information Center (See photo) was not yet operational, we carried a laptop computer to the Dewey Short Center to demonstrate the website and roughly simulate a kiosk. Unfortunately, the demonstration had to be extremely rudimentary, based on a series of downloaded web pages since there was no appropriate modem telephone connection line thereto provide an on-line connection. This a limited series of pages were stored and recalled as if the respondents were at a kiosk. However, they were unable to experience the unique physical characteristics of the kiosk touch screen, and glide pad, and were unable to access more than a few web pages.

Because of the limitations inherent in the interviews, we conducted simulated kiosk-oriented interviews only five parties to get a brief impression of tourist reaction rather than try to rest a test on such an inadequate simulation. (Of course we spoke with many more people in small group and one-on-one interviews not involving the kiosks, and these will be reported in another paper.)

Tourists were intercepted at the Dewey Short Center which is a fifteen minute drive from Branson, and is located on Table Lake where many recreational boaters would come for boating



Figure 11: Dewey Short Tourist Information Center at Table Rock Lake. A facility of the Army Corps of Engineers which will have a kiosk.

and fishing. They were asked to try the site and discuss this type of information. Among the few tourists we spoke to, response was guardedly favorable because people felt they could learn more about local traffic conditions before going into town, and that they might learn about sites and activities of which they were otherwise unaware.

One local person, a twenty-something Bible College student, felt the web site would be very useful when his parents came to visit them and his wife. However, other respondents were not sure how they could access traffic

information when leaving from shows. They did believe if it were available at hotel lobbies, they might use it, though they would not wait in line to do so, and fear that there would be lines. All felt that a good restaurant guide would be helpful. Several felt that the traffic maps would be somewhat helpful, but that the flow of traffic was fairly self-evident, and that they would likely “take their chances” with traffic rather than consult a kiosk before or after a show.

They all liked the idea of a web - based listing of shows, but indicated a very mixed style of information seeking about shows. Several had called ahead for tickets and knew schedules and the nature of the shows ahead of time. Maps had been sent with the tickets. Another couple preferred to arrive in town and “...take our chances.” They went to theaters and bought returned or last-minute tickets, preferring to see the theater in off-hours to locate it, and physically see it before deciding on a show. Another (not the Bible student) was motivated by the Christian religious nature of a show and had no concern with the traffic as long as she got to it. Still another was philosophical, and said that while he knew where his shows were held and how to get there, “... I always leave the hotel an hour early no matter where the show is. That way I don’t have to worry about making it.”

To four of the five, the web site on a kiosk had some limited appeal, primarily to understand the range of nearby attractions, and restaurants, especially if the kiosk were located in their hotel lobby. To one it had no value, for he preferred paper maps, and driving in whatever traffic presented itself.

The Branson interviews are not adequate as a test of the kiosk concept or implementation. They provide only an indication that there is a different sort of concern in Branson than in the Grand Canyon and that there will be some, but limited appeal of the kiosk.

Summary of User Issues

- C The primary problem is initial recognition of the unit as providing any useful information service, especially free information service. This can probably be accomplished with a combination of better signage and coaching of the staffs at kiosk locations to refer people to them.
- C The kiosk in Flagstaff's Visitor Center is somewhat visible but not inviting and does not clearly convey that it offers free tourist information. It does not appear user friendly at all. The most visible elements are the credit card decals which make it look like an ATM or paid service only.
- C People do not initially understand that it is a touch screen system. The keyboard glide pad combined with a touch screen are sufficiently unusual that even savvy users they are initially disoriented. This is not inherently a problem since it also makes the unit adaptable to many skill levels. However, it does mean that directions, now lacking, are needed to get people started without frustration.
- C The touch screen is difficult to use. It often requires a double touch which most people do not understand. Scrolling almost never works with touch. People who are used to using computers have an easier time, because they can use glide pad and keyboard. However, even some computer users found the glide pad difficult or did not recognize it as a mouse.
- C Users did not generally realize that they could touch the locations on the home page map for info about those specific areas. This area specific information can be accessed in no other way.
- C Other functional shortcoming including the lack of a "Back" button which makes searching for information time consuming and discourages experimentation. A "Search" function would allow users to go directly to desired types of information, again probably increasing productivity of the kiosk if the search were limited to the site.
- C Respondents tend to perceive that information is incomplete and not arranged in a particularly logical way. For example they felt that:
 - C Hotel list is neither alphabetized, nor grouped by city. It appears to be random.
 - C Restaurant information is very limited and almost non-existent for the Flagstaff area.
 - C Attraction information did not seem to provide many of the users with what they were looking for (e.g., things to do within Flagstaff).

- C The travel conditions page which gets you to the ADOT site, in no way highlights the ADOT site nor explains what it is.
- C Once you get to the ADOT site, it is quite difficult to use.
 - C The overall map is cryptic - there are no city labels initially to help select the area you want.
 - C Once you do get the right area map there are city names. However, the symbols which represent incidents are not links. You have to scroll down (without being told to) to find the explanations in notes. The notes are difficult for a non-resident to apply to a specific trip.
 - C The notes which explain the incidents are not very user friendly. They are hard to understand and do not seem to be arranged in a particular order. Finding a particular note is time consuming and difficult.
 - C Respondent suggestions for improving the ADOT site included:
 - C Put a few city names on the overview map.
 - C Link the incident symbols to the corresponding note.
 - C Have a function that allows the traveler to put in their start and end point cities and receive a list of incident notes for along the route.

Conclusion

The kiosk system has significant potential which is not being realized. Some simple changes could make a major difference in utilization and probably profitability. Better signage, changing the decals, providing simple, clear directions on getting started, and winning the confidence of Visitor Center staff would be a major low-cost start.

In the longer run, changes to the start screen design (clearer, brighter “free services” button), and certain pages within the site could make the site more useful. Some major structural changes such as inclusion of search and back functions would be challenging, but would enhance the utilization of both the novice and experienced user.

Some other problems are probably a matter of local business politics or the newness of the system. These probably account for the lack of listings and perhaps the apparently random order of listing respondents commented on more than any deficiency inherent in the system.

Issues of system reliability should be looked at further. Our experience is negative, but is not at all definitive.

The application in Branson appears to have a unique set of challenges and a very different set of potential users than the Flagstaff kiosks. While we know the challenges they will face, we do not yet know how the kiosks may function there in real situations.

Thus, in terms of our five criteria, we would say that:

- ! The kiosk system as we witnessed it was neither visible nor inviting. The labeling of the machine caused more people to avoid it than approach it. And the free services touch-icon lacked visibility.
- ! Ease of use varied.
 - " The machine interface itself. Given the unusual configuration of the machine, it was not self-explanatory. With minor coaching, novices became familiar with it reasonable quickly. With experience, the negative transfer of experience (combining keyboard, touch screen, and glidepad with clickable keys) which threw experienced users off initially was overcome fairly quickly.
 - " The software and website. The software and website presented some problems detailed in several parts of the text. From the respondents' point of view, the most notable problems are search capability, back button, and the structure of the ADOT map site.
- ! Reliability is untested, but open to some question based on limited experience.
- ! Useful for the purposes of the user and on the user's terms. The basic essential outline of content of the site accessed by the kiosk is sound. The lack is in detail within certain site components (e.g., restaurants in Flagstaff, key city names on the ADOT map). The users' purposes are sometimes satisfied by the system. For example, enough people were able to find information on attractions and weather to make us believe that many other can do the same. However, often the information is not in a format that is easily applied, especially when standing at a kiosk. Road conditions are an example. Another example is lists of hotels and restaurants which lack an organizational form that makes sense to the user.
- ! Adaptable. Able to support functional adaptation and expansion to meet consumer needs as they are used by the public. This is especially important because most of the respondents we talked with about the kiosks indicated they saw the usefulness, and a very few applauded certain aspects of it as they now exist. Yet for both novices and experienced users, adaptation is called for. In this respect, the system appears capable. The basic design of the interface, and the basic content of the site should be able to be adapted to meet the needs of the consumer. We have described some ideas for this adaptations. There are surely other ways as well.

In conclusion, we would repeat our earlier observation that when the kiosk was functioning and we have led people to it, many of them actually seemed quite intrigued by it in spite of what they said they consider its serious drawbacks. It is for this reason we conclude that the system has unrealized potential.

